

Health-Enabled Smart Sensor Fusion Technology, Phase I

Completed Technology Project (2007 - 2007)



Project Introduction

It has been proven that the combination of smart sensors with embedded metadata and wireless technologies present real opportunities for significant improvements in reliability, cost-benefits, and safety for remote testing and measurement. Adding robust and self-construct network protocol for routing will further simplify testing installation process and increase test network reliability. While the idea of largely autonomous sensors is desirable, there are many issues of cooperation and control that need to be addressed.

Specifically, the sensor fusion and the schema of smart sensor attributes: prediction, planning, updating, communication, and assimilation. The IEEE 1451 standard provides a basic communications link for sensors, but provides no methods specific to programming a sensor's data processing resources for data fusion. Combining IEEE 1451 and networked database, as well as health-enabled smart sensor fusion technology enables user to interface to sensor network to provide dynamic programming and access/monitor the health of sensor nodes. The sensor fusion technology is built upon an open-system architecture with standardized protocol modules/stacks such as SQL, HTML, XML, MATLAB, and LabVIEW.

Anticipated Benefits

Mobitrum expects smart sensor technology will enable more home applications for energy control and security monitoring provided by Internet service providers as value-add services. In order to be deployable by service providers, the smart sensor and fusion technologies have to be embedded within home appliances that have networking capability for remote monitoring and control over Internet. The proposed health-enabled smart sensor fusion technology may apply to one of the following applications: (1) Home control; (2) Energy management for cost saving; (3) Security (intruder detection); (4) Safety (sensing); (5) Utility remote meter reading; (6) Building automation systems real-time monitoring and control of security and surveillance systems, alarms, HVAC; (7) Manufacturing and distribution industrial automation using RFID; and (8) Health care wireless monitoring equipment.



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Fusion Technology, Phase I

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission
Directorate (STMD)

Lead Center / Facility:

Stennis Space Center (SSC)

Responsible Program:

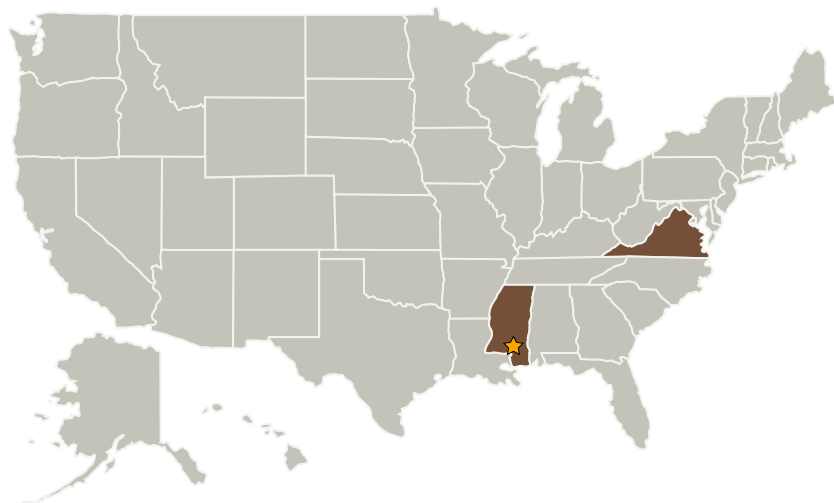
Small Business Innovation
Research/Small Business Tech
Transfer

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Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Stennis Space Center(SSC)	Lead Organization	NASA Center	Stennis Space Center, Mississippi
Mobitrum Corporation	Supporting Organization	Industry	McLean, Virginia

Primary U.S. Work Locations

Mississippi	Virginia
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Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Project Manager:

J. Fernando Figueroa

Principal Investigator:

Ray Wang

Technology Areas

Primary:

- TX02 Flight Computing and Avionics
 - └ TX02.2 Avionics Systems and Subsystems
 - └ TX02.2.6 Data Acquisition Systems